

## **REMARKS**

This is a full and timely response to the outstanding non-final Office Action mailed October 19, 2005. The Applicants traverse the rejections to claims 1-19. Claim 20 has been added by amendment. Reconsideration and allowance of the subject application and presently pending claims 1-20 is respectfully requested.

### **I. Response to Claim Rejections based on Anticipation**

In the Office Action, claims 1, 3-5, 7-8, 12-16 and 18 are preliminarily rejected under 35 USC§102(b) as being anticipated by U.S. Patent No. 5,521,487 to Liu. Claim 19 is preliminarily rejected under 35 USC§102(b) as being anticipated by U.S. Patent No. 5,179,489 to Oliver. For a proper rejection of a claim under 35 USC§102(b), the cited reference must disclose all elements/features/steps of the claim. See, *e.g.*, *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 7 USPQ2d 1129 (Fed. Cir. 1988).

#### **A. Claim 1**

Claim 1 is presently written as:

1. A DC mitigation circuit, comprising:  
a control circuit for evaluating *an amount of DC current* resulting from the DC in a transmission line; and  
switches for providing a current into a winding of a transformer, said switches being controlled by said control circuit,  
wherein said current provided to said winding generates a magnetic flux that *offsets a flux created by said DC current* resulting from the DC in said transmission line.

***(Emphasis added).***

HAYES SOLOWAY P.C.  
130 W. CUSHING ST.  
TUCSON, AZ 85701  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH 03101  
TEL. 603.668.1400  
FAX. 603.668.8567

Claim 1 is preliminarily rejected as anticipated by Liu. Liu teaches an active filter for filtering the current and improving the power factor of the single-phase overhead contact wire by compensating the harmonic frequencies generated and optionally the reactive power consumed by the traction equipment and the auxiliary equipment.

The Applicants respectfully submit that Liu fails to teach, disclose, or suggest at least the above-emphasized element of claim 1. Specifically, Liu fails to at least teach, disclose, or suggest evaluating DC current on a line and offsetting the magnetic flux caused by DC current. Liu is limited to sensing and eliminating harmonic current. Further, Applicants do not believe Liu, as taught, could be used in evaluating DC current on a line and offsetting the magnetic flux caused by DC current.

As Liu fails to at least teach, disclose, or suggest evaluating DC current on a line and offsetting the magnetic flux caused by DC current, the Applicants respectfully request allowance of claim 1.

**B. Claims 2-12 and 20**

The Applicants respectfully submit that since claims 2-12 and 20 depend on independent claim 1, claims 2-12 and 20 contain all limitations of independent claim 1. Since independent claim 1 should be allowed, as argued above, pending dependent claims 2-12 and 20 should be allowed as a matter of law for at least this reason. In re Fine, 5 U.S.P.Q. 2d 1596, 1608 (Fed. Cir. 1988).

HAYES SOLOWAY P.C.  
130 W. CUSHING ST.  
TUCSON, AZ 85701  
TEL. 520.882.7623  
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175 CANAL STREET  
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TEL. 603.668.1400  
FAX. 603.668.8567

**1. Claim 2**

In addition to the above arguments, claim 2, as currently amended, further limits the control circuit to evaluating AC current, in addition to DC current. The AC current includes both harmonic and non-harmonic current, whereas Liu is limited to only harmonic AC current. As Liu fails to at least teach, disclose, or suggest evaluating non-harmonic AC current, the Applicants respectfully request allowance of claim 2.

## 2. Claim 12

In addition to the above arguments, claim 12, as currently amended, further limits the control circuit to evaluating AC current, in addition to DC current and the current provided to offsetting a flux created by AC current. The AC current includes both harmonic and non-harmonic current, whereas Liu is limited to only harmonic AC current. As Liu fails to at least teach, disclose, or suggest evaluating non-harmonic AC current providing current to offsetting a flux created by non-harmonic AC current, the Applicants respectfully request allowance of claim 12.

## C. Claim 13

Claim 13 is presently written as:

13. A method of performing DC mitigation, comprising the steps of:  
*evaluating an amount of DC and harmonic current* resulting from the DC in a transmission line;  
providing a current into a winding of a transformer based on said evaluated amount of DC or harmonic currents resulting from the DC; and  
*generating a magnetic flux* that offsets a flux created by said DC and harmonic currents resulting from the DC in said transmission line.

*(Emphasis added).*

HAYES SOLOWAY P.C.  
130 W. CUSHING ST.  
TUCSON, AZ 85701  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH 03101  
TEL. 603.668.1400  
FAX. 603.668.8567

Claim 13 is preliminarily rejected as anticipated by Liu. Liu teaches an active filter for filtering the current and improving the power factor of the single-phase overhead contact wire by compensating the harmonic frequencies generated and optionally the reactive power consumed by the traction equipment and the auxiliary equipment.

The Applicants respectfully submit that Liu fails to teach, disclose, or suggest at least the above-emphasized element of claim 13. Specifically, Liu fails to at least teach, disclose, or suggest evaluating DC and harmonic current on a line and generating a magnetic flux to offset the magnetic flux caused by DC current. Liu is limited to sensing and eliminating harmonic current. Further, Applicants do not believe Liu, as taught, could be used in evaluating DC and harmonic current on a line and generating a magnetic flux to offset the magnetic flux caused by DC current.

As Liu fails to at least teach, disclose, or suggest evaluating DC and harmonic current on a line and generating a magnetic flux to offset the magnetic flux caused by DC current, the Applicants respectfully request allowance of claim 13.

#### **D. Claims 14-18**

The Applicants respectfully submit that since claims 14-18 depend on independent claim 13, claims 14-18 contain all limitations of independent claim 13. Since independent claim 13 should be allowed, as argued above, pending dependent claims 14-18 should be allowed as a matter of law for at least this reason. In re Fine, 5 U.S.P.Q. 2d 1596, 1608 (Fed. Cir. 1988).

#### **1. Claim 17**

HAYES SOLOWAY P.C.  
130 W. CUSHING ST.  
TUCSON, AZ 85701  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH 03101  
TEL. 603.668.1400  
FAX. 603.668.8567

In addition to the above arguments, claim 17, as currently amended, is further limited to evaluating AC current, in addition to DC current. The AC current includes both harmonic and non-harmonic current, whereas Liu is limited to only harmonic AC current. As Liu fails to at least teach, disclose, or suggest evaluating non-harmonic AC current, the Applicants respectfully request allowance of claim 17.

**E. Claim 19**

Claim 19 is presently written as:

19. A DC mitigation circuit, comprising:  
means for evaluating an amount of DC or harmonic current resulting from the DC in a transmission line; and  
*means for providing a current into a winding of a transformer*, said means for providing a current into said winding being controlled by said means for evaluating,  
*wherein said current provided to said winding generates a magnetic flux that offsets a flux created by said DC or harmonic current* resulting from the DC in said transmission line.

*(Emphasis added).*

Claim 19 is preliminarily rejected as being anticipated by Oliver. Oliver teaches a polyphase electric power distribution system is protected from the effects of geomagnetic storms by countering the difference of potential between spaced grounding points in the system, and or by altering the magnetic circuits of transformers in the system to reduce half-cycle saturation and associated high peak currents.

The Applicants respectfully submit that Oliver fails to teach, disclose, or suggest at least the above-emphasized element of claim 19. Specifically, Liu fails to at least teach, disclose, or suggest means for providing a current to generate a magnetic flux that offsets a flux created by said DC or harmonic current. The office action, at page 4, suggests this

HAYES SOLOWAY P.C.  
130 W. CUSHING ST.  
TUCSON, AZ 85701  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
MANCHESTER, NH 03101  
TEL. 603.668.1400  
FAX. 603.668.8567

element is taught in part by item 74 in FIG. 9 of Oliver. Item 74 is a hydraulic pump that neither creates a current, nor a magnetic flux. The hydraulic pump provides fluid to an air gap that dampens DC conductivity across the air gap. The Applicants do not understand how the hydraulic pump can be read to provide a current to generate a magnetic flux that offsets a flux created by said DC or harmonic current.

As Oliver fails to at least teach, disclose, or suggest providing a current to generate a magnetic flux that offsets a flux created by said DC or harmonic current, the Applicants respectfully request allowance of claim 19.

## **II. Response to Drawings Objection**

Applicants respectfully submit the drawings objection is overcome by the attached corrections and respectfully requests that the Examiner withdraw the drawings objection. No new matter has been added by the attached drawings and no matter has been removed. The previously submitted drawings included informal, handwritten elements. The attached drawings are formal versions of the previously submitted drawings.

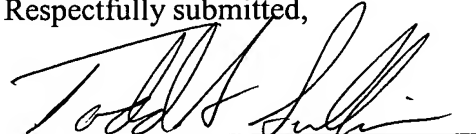
HAYES SOLOWAY P.C.  
130 W. CUSHING ST.  
TUCSON, AZ 85701  
TEL. 520.882.7623  
FAX. 520.882.7643

—  
175 CANAL STREET  
MANCHESTER, NH 03101  
TEL. 603.668.1400  
FAX. 603.668.8567

### CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicants respectfully submit that all objections and rejections have been traversed, rendered moot and/or accommodated, and that presently pending claims 1-20 are in condition for allowance. Favorable reconsideration and allowance of the present application and the presently pending claims are hereby courteously requested. If in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (603) 668-1400.

Respectfully submitted,

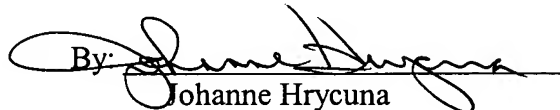


Todd A. Sullivan  
Attorney for Applicants  
Reg. No. 47,117

Customer No. 26,812

### CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on January 18, 2006 at Manchester, New Hampshire.

By:   
Johanne Hrycuna

**HAYES SOLOWAY P.C.**

130 W. CUSHING ST.  
TUCSON, AZ 85701  
TEL. 520.882.7623  
FAX. 520.882.7643

175 CANAL STREET  
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TEL. 603.668.1400  
FAX. 603.668.8567